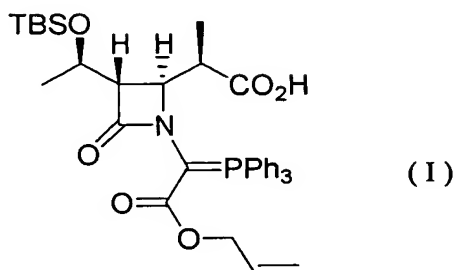


CLAIMS

1. A crystal of a compound of formula (I) or its salt or their solvate:



wherein TBS represents t-butyldimethylsilyl and Ph represents phenyl.

2. The crystal according to claim 1, which is a crystal of a solvate of the compound of formula (I).

3. The crystal according to claim 1, which is a crystal of an ethyl acetate solvate of the compound of formula (I).

4. The crystal according to claim 1, which exhibits a powder X ray diffraction pattern having diffraction peaks at at least the following diffraction angles (2θ):

Diffraction angle (2θ) [°]

10.2 ± 0.1

11.7 ± 0.1

17.0 ± 0.1

21.5 ± 0.1

5. The crystal according to claim 4, which exhibits a powder X ray diffraction pattern having diffraction peaks at at least the following diffraction angles (2θ):

Diffraction angle (2θ) [°]

10.2 ± 0.1

11.7 ± 0.1

11.9 ± 0.1

$$17.0 \pm 0.1$$

$$\underline{21.5 \pm 0.1} \quad .$$

6. The crystal according to claim 1, which can be obtained by precipitating a crystal from a solution of the compound of formula (I) dissolved in ethyl acetate.

7. The crystal according to claim 1, which is a crystal of a butyl acetate solvate of the compound of formula (I).

8. The crystal according to claim 1, which exhibits a powder X ray diffraction pattern having diffraction peaks at at least the following diffraction angles (2 θ):

Diffraction angle (2 θ) [°]

$$9.3 \pm 0.1$$

$$12.5 \pm 0.2$$

$$13.7 \pm 0.2$$

$$\underline{15.7 \pm 0.2} \quad .$$

9. The crystal according to claim 8, which exhibits a powder X ray diffraction pattern having diffraction peaks at at least the following diffraction angles (2 θ):

Diffraction angle (2 θ) [°]

$$8.0 \pm 0.1$$

$$9.3 \pm 0.1$$

$$9.8 \pm 0.2$$

$$12.5 \pm 0.2$$

$$13.7 \pm 0.2$$

$$\underline{15.7 \pm 0.2} \quad .$$

10. The crystal according to claim 1, which exhibits a powder X ray diffraction pattern having diffraction peaks at at least the following diffraction angles (2 θ):

Diffraction angle (2 θ) [°]

$$5.7 \pm 0.1$$

$$11.2 \pm 0.2$$

13.9 ± 0.2
 $\underline{14.5 \pm 0.2}$.

11. The crystal according to claim 10, which exhibits a powder X ray diffraction pattern having diffraction peaks at at least the following diffraction angles (2 θ):

Diffraction angle (2 θ) [°]

 5.7 ± 0.1
 8.4 ± 0.1
 10.3 ± 0.1
 11.2 ± 0.2
 13.9 ± 0.2
 $\underline{14.5 \pm 0.2}$.

12. The crystal according to claim 1, which be obtainable by precipitating a crystal from a solution of the compound of formula (I) dissolved in butyl acetate or a mixture of butyl acetate with a solvent for crystallization.

13. The crystal according to claim 12, wherein said solvent for crystallization is n-hexane.

14. The crystal according to claim 1, which be obtainable by dissolving the compound of formula (I) in a solvent selected from the group consisting of water, methanol, ethanol, propanol, isopropyl alcohol, n-butanol, diethyl ether, methyl acetate, ethyl acetate, propyl acetate, butyl acetate, and a mixture of any one of said solvents with a solvent for crystallization, and precipitating a crystal from the solution.

15. A process for producing a crystal according to claim 1, said process comprising

dissolving the compound of formula (I) in a solvent selected from the group consisting of water, methanol, ethanol, propanol, isopropyl alcohol, n-butanol, diethyl ether, methyl acetate, ethyl acetate, propyl acetate, butyl acetate, and a

mixture of any one of said solvents with a solvent for crystallization, and precipitating a crystal from the solution.

16. The process according to claim 15, wherein said solution and a separately provided solvent for crystallization are subjected to the procedure by a vapor diffusion method to precipitate a crystal.

17. The process according to claim 16, wherein said procedure by the vapor diffusion method comprises allowing said solution and a separately provided solvent for crystallization to stand separately in respective hermetically sealable vessels in a volume ratio of 1 : 1 to 1 : 20.

18. The process according to any one of claims 15 to 17, wherein said solvent for dissolving the compound of formula (I) is selected from the group consisting of ethyl acetate, butyl acetate, and a mixture of any one of said solvents with a solvent for crystallization.

19. The process according to any one of claims 15 to 18, wherein said solvent for crystallization is selected from the group consisting of n-pentane, n-hexane, n-heptane, cyclohexane, petroleum ether, diisopropyl ether, and diethyl ether.

20. The process according to claim 19, wherein said solvent for crystallization is n-hexane.

21. The process according to any one of claims 15 to 20, wherein said solvent is one prepared by dissolving a noncrystalline solid compound of formula (I) as the compound of formula (I) for dissolution in said solvent in ethyl acetate or butyl acetate, further adding n-hexane and cooling the mixture, and vacuum drying the resultant solid matter.

22. Use of the crystal according to claim 1, as a synthetic intermediate for the production of a 2-substituted-1 β -methyl carbapenem antimicrobial compound.